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Reply to
Attn. of: WCM-127

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MEMORANDUM

SUBJECT: Oxychem Tacoma Site Listed Waste Determination
EPA I.D. No. WAD009242314

FROM: Catherine Massimino
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Technical Specialist

To: File

This waste characterization review was performed to determine (1) whether the contaminated groundwater plume from the OxyChem Tacoma site contains listed wastes under the Resource Conservation and Recovery Act (RCRA) 40 CFR Part 261 Subpart D-Lists of Hazardous Waste, and (2) whether the lime sludges generated at the OxyChem Tacoma site and disposed at on-site and off-site locations in the Tacoma Flats area are listed waste under RCRA 40 CFR Part 261 Subpart D-Lists of Hazardous Waste. This review did not extend to determining whether these waste streams are characteristic hazardous waste under RCRA 40 CFR Part 261 Subpart C-Characteristics of Hazardous Waste.

This review included an evaluation of the following documents:

1. Background Document Resource Conservation and Recovery Act, Subtitle C - Identification and Listing of Hazardous Waste Sections 261.31 and 261.32 - Listing of Hazardous Waste, U.S. Environmental Protection Agency, Office of Solid Waste, Volume IX, Chlorinated Hydrocarbon Waste From The Purification Step of the Diaphragm Cell Process Using Graphite Anodes in Chlorine Production, pages 64-77. (Attachment A)

2. Background Document Resource Conservation and Recovery Act, Subtitle C - Identification and Listing of Hazardous Waste Sections 261.31 and 261.32 - Listing of Hazardous Waste, U.S. Environmental Protection Agency, Office of Solid Waste, Volume VI, Trichloroethylene and Perchloroethylene Production Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene, pages 475-497. (Attachment B)

3. RCRA Part B Permit Application Volume 1, and Volume 3. excerpts, revised as of 4/87, Volume 1-Tables 2-1 and 3-9, Volume 3-Tacoma Plant Site Report on Continuing Releases (Attachment D) and Appendix A, Tacoma Plant History and Process Description (Attachment D.i.).

4. OSWER Directives 9444.1986 (26), 9444.1986 (27). (Attachment E).

5. February 9, 1991 correspondence from Lyle Feller, Technical Assistant-Production, Hooker Electrochemical, to Mr. Frank Monahan, Washington Department of Ecology, concerning characterization of certain wastes disposed off-site by the Hooker Electrochemical Tacoma Plant.(Attachment F)

6. February 21, 1979 memorandum from Dennis F. Stefani, Toxics Engineer, USEPA Region 10 to Lloyd A. Reed, Director, Enforcement Division, USEPA Region 10, concerning Hooker Chemicals and Plastics Corp, Tacoma, Washington. (Attachment G)

7. July 3, 1979 memorandum from Region 10 S&A Inspection Team, to Gary L. O'Neal Director, Surveillance & Analysis Division, USEPA Region 10, concerning Inspection Hooker Plant and Waste Disposal Operations, Tacoma, Washington. (Attachment H)

8. February 26, 1996, PRI Source Identification Program Report, Oxychem submitted to EPA Region 10.

A review of the above documents has identified the following sources of contamination at the OxyChem Tacoma Plant, which are very likely the major sources of organic contamination of groundwater at the OxyChem Tacoma Plant.

A. Process wastes from the trichlorethylene (TCE) process, and;
B. Process wastes from the perchloroethylene (PCE) process.

Based on a review of Documents 3, 5, 6 and 7 (see above), Oxychem Tacoma Plant manufacturing process for TCE was based on calcium carbide reacted with water to form acetylene, and the production of PCE was based on reacting chlorine with TCE (See Attachment D.i. for a more detailed breakdown of the production processes). The following wastes from the TCE/PCE production processes were sent to the lime ponds on-site, discharged to Hylebos Waterway via Oxychem's discharge permit, disposed by barge (See figure 1 of Attachment D) into Commencement Bay and sent to off-site disposal sites.

TCE Process:
- excess lime from acetylene generator,
- calcium chloride solution from hydrolyzers/strippers, and -
- chlorinated organic residue from the reboiler process

PCE Process:
- calcium chloride solution from the hydrolyzer/stripper, and
- chlorinated organic residue from the reboiler

Chemicals contained in these TCE and PCE production wastes included:

Calcium carbide	Carbon Tetrachloride
Chlorine	Chloroform
Trichloroethylene	Chlorinated ethanes
Hexachlorobutadiene	Tetrachloroethanes
1,1,2,2,-Tetrachloroethane	Tetrachloroethylene
Hexachloroethane	Solvent stabilizers
Hexachlorobenzene	Pentachloroethane
Lime	Calcium chloride
Acetylene	Chlorinated butanes

Some of the major organic contaminants identified in the groundwater at the Oxychem Tacoma plant include:

1, 2-transdichloroethylene	trichloroethylene
1,1,2,2-tetrachloroethane	tetrachloroethylene
carbon tetrachloride	1,1-dichloroethylene
chloroform	1,1,2-trichloroethane
vinyl chloride	methylene chloride
acetone	hexachlorobutadiene
hexachloroethane	1,1,-dichloroethane
1,2-dichloroethane	

A review of EPA hazardous waste code listings was performed which identified K030 as a potential waste listing for the Oxychem Tacoma Plant TCE and PCE production wastes. Consequently, a detailed review of the listing K030 was performed. This listing addresses column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene. The listing's manufacturing process produces PCE and TCE by a single-stage oxychlorination process from ethylene dichloride and chlorine. The column bottoms or heavy ends from the manufacturing process covered by this listing typically include ethylene dichloride, perchloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, pentachloroethane, hexachlorobutadiene, hexachlorobenzene and hexachloroethane. This listing as promulgated does not cover the process utlilzed by Oxychem Tacoma plant for production of TCE and PCE. The Oxychem Tacoma Plant process, as described above, is not based on co-production and is not based on chlorination or oxychlorination of ethylene chloride. The wastes generated from the Oxychem Tacoma Plant TCE and PCE production processes are not EPA listed hazardous wastes.

The listed wastes managed at the Oxychem Tacoma Plant include K073 and F002 (spent solvent or solvent contaminated soil) and various F and U code listings from laboratory wastes when discarded. A review of Oxychem Tacoma Plant waste management practices based on the above documents indicates that K073 listed wastes were either discharged to Hylebos Waterway via their discharge permit or sent off-site for incineration, and the F002 and laboratory wastes were sent off-site for disposal. There is no documentation that these listed wastes have been spilled on-site and not adequately cleaned up resulting in groundwater contamination. Pursuant to 40 CFR §261.4 Exclusions, industrial discharges that are point source discharges subject to the regulation under section 402 of the Clean Water Act are not solid wastes and are not hazardous waste. Consequently, the K073 hazardous waste listing would not be transferred to the water way or residual removed from the waterway (i.e., sediments, dredge spoils, etc.).

In summary, based on review of the above documents, the contaminated groundwater from Oxychem Tacoma site does not contain EPA listed hazardous waste under 40 CFR Part 261 Subpart D, and the lime sludges generated at the OxyChem Tacoma site and disposed at on-site and off-site locations in the Tacoma Flats are not listed hazardous waste under 40 CFR Part 261 Subpart D.